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ABSTRACT

The influence of atmospheric conditions and the day of the week on school children's behavior was investigated by undergraduates. The college students were told either that their participation in the research was compulsory and would be graded, or that their participation was voluntary and ungraded. Fifty teachers observed their pupils' behavior and completed observation scales twice daily. When the college student researchers knew that the report of the teachers' observations would be checked, the reliability of their data collection was 100 percent. When the students did not know their reports would be checked and their research was ungraded, 14 out of 47 faked their observations. Ten other students began the research but stopped after 1 or 2 weeks. It was found that the weather influenced the behavior of the school children. The higher the air pressure and the greater sunshine hours in a day, the quieter the children were. However, the more humid it was and the heavier the rainfall, the more active the children were. In addition, on Monday morning they were quieter and on Friday afternoon they were more active. (SW)

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Reliability of Undergraduate Student in a Research on the Relations between Behavior and Days of the Week or Atmospheric Conditions.

by

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INTRODUCTION

University researchers frequently employ students as research apprentices. However, these tend to be graduate students and are found generally to be reliable in the conduct of research tasks (Enns 1982). In universities not offering doctoral programs graduate students are in shorter supply. In consequence, faculty members are turning to undergraduates for their apprentices. It may be, however, that undergraduate apprentice researchers are not as reliable as graduate students. To inquire whether undergraduates can be valuable collaborators in collection of data, the following study was conducted.

The investigator invited the students enrolled in a course of initiation to research to participate in a research project. The objective of the proposed research was to attempt to establish a relationship between the behavior of school children and atmospheric condition or the day of the week.

A literature review established that there exists a relationship between the children's behavior and variations in air pressure. In most studies subjects were handicapped children (socio-affective disturbed or mentally defective) they were seldom normal children.

RESEARCH OBJECTIVES

This research was aimed toward three objectives. Two were known by the students, the other was not. To verify:

1. Whether a relationship can be established between children's behavior and atmospheric conditions.
2. Whether a relationship can be established between school children's behavior and the day of the week.
3. The reliability of the undergraduates in collecting the research data.

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INSTRUMENT

To conduct the study an easy observation scale was prepared. This scale was made to be used by teachers to register the behavior of their pupils at the end of every half day. These observations were registered on a three step scale, where 2 was the mean. Teachers were asked to register "2" when the school children behaved normally. There to register "1" if the children were more quiet than usual and "3" if the pupils were more active. In November 1981 the three step scale was used but in February 1982 this was changed to a five step scale wehre 3 was the mean because students felt that a five step scale would be more sensitive.

METHODOLOGY

The experiment was run twice. The first time, in November 1981, students were told that participation in the research was compulsory and that it would be graded at 10% of the final mark. They were also told that their report would be checked with the school teachers to avoid faked observations.

During the second occasion in February 1982, students were asked to undertake the research but they were not told that their participation would be graded. Furthermore, they were told that their reports would be checked only after they had given to the researcher the completed observation scale for the first week.

DATA ANALYSIS AND RESULTS

First Objective

To verify if there was a relationship between pupil behavior and the atmospheric condition, fifty teachers were asked by the students to observe their pupils' behavior and to fill out the observation scale twice daily. A mean of the teachers' observations for every half a day was computed. These means

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were compared with the weather condition by a correlation coefficient. The weather conditions were specified as atmospheric pressure, relative humidity, amount of rainfall, amount of snowfall, wind speed, sunshine hours and temperature in Celsius degrees. The weather data came from William Bourque of the office of Atmospheric Environment, Environment Canada, Moncton Airport, New Brunswick.

The correlation coefficients obtained appear in Table I.

TABLE I

COORELATIONS BETWEEN PUPIL BEHAVIOR AND WEATHER CONDITION

Behavior and Air Pressure	-.35*
Behavior and Relative Humidity	.37
Behavior and Height of the Rainfall (November)	-.44*
Behavior and Height of the Snowfall (February)	-.09
Behavior and Wind Speed	.11
Behavior and Temperature in Celsius Degrees	-.05
Behavior and the Sunshine Hours	-.39*
Behavior and all the Weather Conditions (1)	-.61**

(1) If the behavior is the dependent variable and it is correlated with all the weather conditions considered as independent variables.

* The correlation coefficients marked with an * are significant at the level of .05 and those marked with two ** are significant at the level of .01.

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Second Objective

To verify whether a relationship can be established between children behavior and the day of the week, a mean and a standard deviation were computed on all the teachers' observations for every half a day as well as an analysis of variance between means. Means and standard deviations for November 1981 are presented in Table II and for February 1982 in Table III.

INSERT TABLE II AND III HERE

As one can see on Table II and III the means of teachers' observations of the children's behavior on the first half-day following a holiday are lower than the other half-days and the means of teachers' observations of the last half-day before a holiday are higher than the others. This was true not only when the holidy was the weekend but when it was on a week day (November the 11th). The differences between the behavior of the children before and after a holiday is significant.

Third objective

To verify the reliability of the undergraduate students in collecting data, there were two qualifications in the third objective. The first qualifier was that students knew that their report of the teachers' observations would be checked. Their reliability was 100%, nobody brought back faked observations.

In the second study, the qualifier was that students did not know their reports would be checked and their participation in the research was not graded. Fourteen students out of forty seven brought back faked observations. They completed the observation scale themselves. Ten other students began the research but they stopped after one or two weeks. Twenty

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three students went to the end of the research and persevered at least three weeks out of four.

DISCUSSION AND CONCLUSION

The weather influenced the behavior of the school children ($r = .65$, Table I). The higher the air pressure and the greater sunshine hours in a day, the quieter the children were. But the more humid it is and heavier the rainfall, the more active the children were. Also, the day of the week influences the children's behavior, on Monday morning they were quieter and on Friday afternoon they were more active. It might be an indication that before planning the work for the day teachers might consider the weather forecast and the specific day of the week.

Concerning the participation of the students in a research study, it was found that one is better to grade participation and to oversee work as is often done in other term papers or laboratory exercices. This seems to be a prerequisite for increasing the reliability of the data they collect.

TABLE II

MEANS AND STANDARD DEVIATIONS OF BEHAVIOR FOR EVERY HALF-DAY OF NOVEMBER 1981.

DATES		MEANS	STANDARD DEVIATIONS
2	AM	1.3	0.48
	PM	2.0	0.70
3	AM	2.1	0.56
	PM	2.1	0.31
4	AM	2.0	0.63
	PM	2.33	0.65
5	AM	2.18	0.60
	PM	2.13	0.51
6	AM	2.11	0.70
	PM	2.52	0.71
9	AM	1.68	0.57
	PM	2.09	0.60
10	AM	1.95	0.50
	PM	2.38	0.67
12	AM	1.65	0.67
	PM	1.90	0.54
13	AM	2.1	0.54
	PM	2.3	0.73
16	AM	1.96	0.64
	PM	2.17	0.65
17	AM	2.35	0.49
	PM	2.49	0.73
18	AM	2.43	0.59
	PM	2.39	0.58
19	AM	2.24	0.70
	PM	2.4	0.60
20	AM	2.0	0.56
	PM	2.5	0.61
23	AM	2.0	0.55
	PM	2.29	0.46
24	AM	2.05	0.50
	PM	2.1	0.55
25	AM	2.05	0.67
	PM	2.41	0.62
26	AM	2.05	0.56
	PM	2.24	0.54
27	AM	2.04	0.69
	PM	2.32	0.58
	TOTAL	2.15	0.60

Every difference larger than 0.33 is significant at the level of 0.10 and every difference larger than 0.39 is significant at the level of .05, and larger than 0.51, at the level of .01.

TABLE III

MEANS AND STANDARD DEVIATIONS OF BEHAVIOR FOR EVERY HALF-DAY OF FEBRUARY 1982

DATES	MEANS	STANDARD DEVIATIONS
2 AM	2.41	1.06
PM	2.88	0.93
3 AM	2.83	1.04
PM	3.06	1.06
4 AM	2.71	1.10
PM	2.47	0.83
5 AM	2.86	0.81
PM	3.57	
8 AM	2.21	0.98
PM	2.25	0.79
9 AM	2.56	1.04
PM	2.94	1.00
10 AM	2.75	1.24
PM	3.79	0.97
11 AM	2.81	0.83
PM	3.12	1.22
12 AM	3.05	1.08
PM	3.63	1.01
15 AM	2.16	0.96
PM	2.65	0.88
16 AM	2.72	0.83
PM	2.94	1.00
17 AM	2.88	0.78
PM	3.07	0.70
18 AM	2.89	0.68
PM	3.28	1.02
19 AM	2.45	0.94
PM	3.53	0.80
23 AM	2.56	1.03
PM	2.86	0.92
24 AM	2.44	0.73
PM	2.81	0.66
25 AM	2.73	1.1
PM	3.	0.92
TOTAL	2.84	0.96

Every difference between means larger than 0.47 is significant at the level of .10, larger than 0.56 is significant at th level of .05, and larger than 0.74 at the level of .01.

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